

PAWNEE TRADITIONS.<sup>1</sup>

SOME time ago Mr. Dorsey, who is curator of anthropology at the Field Museum of Natural History, Chicago, undertook a series of investigations among the North American tribes of the Caddoan stock, to which the Pawnee among other Indians of the plains belong. The investigations were begun on behalf of the Field Museum, and have been continued for the last four years under the auspices of the Carnegie Institution.<sup>2</sup> Of the results, one volume has been issued by the American Folklore Society, some detailed articles have been published in the Journal of the same society and the *American Anthropologist*, and the present is the fourth volume issued by the Carnegie Institution. All materials in volume form are composed of traditional narratives, and it may at once be said that they form an important contribution to our knowledge of the aborigines.

A collection of native tales as extensive as that in the volume before us (it contains 546 quarto pages and 148 tales of varying length) must of necessity reveal incidentally much of native custom and belief. Especially is the religion abundantly illustrated, since many of the stories are connected either with the sacred objects or the sacred ceremonies. They profess to explain the origin of these, and are told, as a rule, only during the ceremonies. Moreover, they afford glimpses of the social organisation of the tribes and of their amusements, as well as of their more serious business of hunting and fighting. Pawnee is a word said to mean wolves, and the Pawnee were as noted for their bravery, their endurance, their skill, their untiring activity and relentless character as the animals the name of which they were proud to bear. Their religion was most actively concerned with the animals with which they came into contact. These animals were supposed to be organised in much the same way as themselves, and such of them as were articles of food were believed to give themselves willingly to mankind, always provided that they were treated with ceremonial respect and that dances and other rites were performed from time to time in their honour. From them and other animals human beings received magical gifts and more than natural powers if they obtained by prayer and fasting the favour of the chiefs of the animal lodges. Above the animals were a number of superior beings called "gods," most of them more or less vaguely conceived. At the head of the pantheon stood Tirawa, a quasi-creator, whose authority all the others acknowledged.

The word "mythology" on the title-page is a somewhat unfortunate choice. On the one hand, we do not get in this volume so complete a view of what may be called the sacred history of the Pawnee, apart from the origin of medicine ceremonies, as in Mr. Dorsey's previous work on the "Traditions of the Skidi Pawnee." On the other hand, many tales are included which can only be called mythology by an illegitimate extension of the meaning of that word. Such tales are not connected with the religion of the tribe, nor are they believed to be true. They are often concerned with the lower animals; and they correspond partly to our fairy-tales and partly to our apogees. Speaking of the stories in general, it may be said that the most superficial reader will at once recognise that in plot and incident they are to a large extent similar to those of the surrounding and allied peoples, are conditioned by their mode of life, and are peculiar to North America. At the same time many of the incidents, and sometimes whole chains of incident, are common to humanity. To mention only a few, we have the incident of the Magical Flight and Pursuit, the Task of Recognition to be performed by a husband who comes to find his bride, the story of Orpheus and Eurydice, the Swan-maiden Bride, the Transformation Fight. In the form in which they are presented they are so thoroughly native to the soil that it cannot be suggested that they are due to European intercourse. But in any case the old wild borrowing theory has long been given up as discredited. While it is admitted on all hands that transmission of stories does take place, students who are interested in the

<sup>1</sup> "The Pawnee Mythology." Part i., Collected under the Auspices of the Carnegie Institution of Washington. By George A. Dorsey. Pp. 546. (Washington, D.C.: Carnegie Institution, 1905.)

question seek proofs of transmission within saner limits.

The second part of the work is not yet published. It is intended to include the music and text of the songs referred to, or given only in a free translation, in the present volume. It will also comprise a comparative study of the tales and incidents, in which they will be treated in their relation to "the tales of other tribes of the so-called Caddoan stock," and, indeed, to those of other American Indians. This is a very necessary complement to the author's other investigations. It is to be hoped he will also find opportunity then or very soon for a fuller description of the social organisation, the rites and beliefs of the stock than he has hitherto given. We want to know, for instance, what are the marriage-rules of the tribes, whether descent is traced in the male or the female line, what their clan-organisation is; we want full descriptions of their ceremonies, their taboos, and so forth. As already intimated, something may be gathered from the stories, but our inferences may be right or wrong; we need authoritative statements. Mr. Dorsey is so well qualified by life-long study, and by his eminence among American anthropologists, and he has given us in these collections of Caddoan traditions so much of interest and value, that he will pardon our demanding a key that shall unlock what at present remains closed. Our thanks to him are heartfelt, but they partake very largely of that gratitude which is a sense of (or at least an earnest hope for) favours to come.

E. SIDNEY HARTLAND.

## PLANT DISEASES AND REMEDIES.

THE experiment station of the Hawaiian Sugar Planters' Association has issued as Bulletin No. 5<sup>1</sup> a remarkable publication which not only deals in a very comprehensive and thorough way with the fungus enemies of the sugar-cane, but also contains a series of valuable notes on associated insects and nematodes.

The volume has bound with it also Bulletin No. 4 of the same station, and by the same author. This bulletin is on some elements of plant pathology. In the course of the work mention is made of new blights found in the cane-fields of Hawaii, and of the new and threatening aspects of blights already known.

Part i. is introductory, and may be passed over. Part ii. deals with the root disease of sugar-cane. In this section, which covers eighty-five pages, we have a most accurate and interesting description of the strange Ithyphallus fungus, which is one of the causes of root disease. "Time alone can show," Mr. Cobb tells us, "what the relative importance of the Ithyphallus fungus will be among the root-diseases of cane." The serious losses caused by the fungus and its early history are first traced, and then the extraordinary fructifications are detailed and admirably illustrated. Then follows an account of the relations of insects to Ithyphallus. The author tells us that five species of flies, a beetle, and an ant frequent the fresh fructifications, and that some of the flies are so passionately fond of the sticky dark-green spore-mass that they can scarcely be driven away.

Dispersal of this fungus by their agency, especially in the excreta, is proved, and although the flies are not named generically, they were known to be Sarcophagidae and Muscidae. The work done in this subject is remarkable. It was shown that the spores are also carried in numbers on the feet. The spores from five of the fly tracks on glass were found to be 860,000 per track. Then follow notes on digestive power of flies, notes on defecation (the number of spores found in a "fly-speck" was shown to be 22,400,000 in some instances); even the weight of a fly ration is gone into with wonderful exactness.

The use of lime as a fungicide is pointed out, and methods of cultivation given.

Parts iii. and iv. deal with the leaf-splitting blight and rind disease; the first-named is shown to be due to Mycosphaerella. The pine-apple disease (*Thielaviopsis ethaceticus*) and the relation of certain insects and mites to it is detailed, and also the well-known yet little under-

<sup>1</sup> "Fungus Maladies of the Sugar Cane." By N. A. Cobb. (Honolulu: Hawaiian Gazette Co., Ltd., 1905.)

stood Eleau disease. Various experiments in the preparation and disinfection of cane cuttings and in testing cane varieties for their resistance to disease that have been carried out are recorded, and should prove most helpful to growers.

The ninth and concluding section deals with free-living nematodes inhabiting the soil about the roots of cane and their relation to root diseases. The root diseases are very serious, and in these soil-inhabiting nematodes we have organisms capable, through their punctures, of giving entrance to smaller parasitic organisms that would hasten the death of the plant roots.

The author describes no less than eighteen new species of these worms, and records five more found around the roots of diseased canes in Hawaii. They are included in the genera *Dorylaimus*, *Tylenchus*, *Mononchus*, *Prismatolaimus*, *Cephalobus*, &c., and one new genus, *Anthonomena*, is described.

The whole work is excellent in every respect, not only from an economic point of view, but as an example of the thorough way in which such scientific investigations should be carried out.

The sixth report of the Woburn Experimental Fruit Farm deals with various washes used for the destruction of injurious insects.<sup>1</sup> Among the more important experimented with were the alkali washes, paraffins and emulsions, lime-sulphur and others in connection with the destruction of the mussel scale (*Mytilaspis pomorum*). The portion of the report dealing with the paraffin oils and emulsions will prove of great value, and also from a scientific point of view much else in the report. But some of the results do not at all agree with what growers have found, such, for instance, that lead arsenate wash badly scorches the leaves under certain conditions and at certain strengths. It has not, it seems, been found to do so in their hands.

Some interesting work on silver leaf is given in conclusion. As a scientific chemical work it is all that could be desired, but the reader must take certain results with care, for if "egg-counts" have been made taking into account the following sentence, "we certainly found a greater destruction of eggs by insecticides in the case of scales which had been thus bored (by Chalcididae), than of those which were intact," then we must discount some of the results obtained. Some of the opening remarks might with advantage have been excluded by the authors.

But in spite of these few blemishes there is much useful reading, and horticulturists are indebted to the authors for their kindly interest, which we hope to see continued, for it is the first attempt at anything like sound treatment of the subject.

FRED. V. THEOBALD.

#### THE POSITION AND PROSPECTS OF CHEMICAL RESEARCH IN GREAT BRITAIN.<sup>2</sup>

##### *The Status of Original Research.*

TO all who are familiar with the influence of scientific progress on the evolution of civilisation, that is, to all students of the history of modern science, the general want of appreciation of research here cannot but be a matter of profound wonderment. It is not my intention to attempt an analysis of the causes of this public apathy on the present occasion. We must, I am afraid, deal with it as an accepted fact. Attention has from time to time been directed to this national weakness by the Press and by publicists whose influence should carry conviction to the lay mind. We can, no doubt, remember weighty utterances by statesmen such as the Duke of Devonshire, the late Lord Salisbury, Lord Rosebery, Mr. Chamberlain, Mr. Balfour, and, above all, in recent times, Mr. Haldane, who loses no opportunity of driving home the lesson of the importance of science and of scientific method to the national welfare. Nor have our scientific workers them-

<sup>1</sup> "Sixth Report of the Woburn Experimental Fruit Farm." By the Duke of Bedford, K.G., and Spencer U. Pickering, F.R.S. Pp. v+235. (London : Eyre and Spottiswoode, 1906.) Price 4s.

<sup>2</sup> Abridged from the Presidential Address delivered at the annual general meeting of the Chemical Society on March 22 by Prof. Raphael Meldola, F.R.S.

selves failed to sound the note of alarm with all the authority of expert knowledge. But, in spite of these individual efforts, it cannot be said that we have made much headway; public interest in scientific research may still be considered to be on a low level—certainly lower here than in many other leading nations, and most decidedly lower than is desirable in the best interests of our country. A temporary flicker of excitement is caused when some sensational discovery is announced, or when some result of immediate practical (commercial) value is made known, but even in these cases the interest taken is only transitory and is narrowed down to the immediate issue; the broad cause which makes such results possible is lost sight of. The steady, plodding work which culminates in great discoveries is being carried on quite unheeded by the general public, and the workers themselves are practically unknown outside the ranks of science. Research as a "cult" is not understood; the national attitude towards the workers is one of "payment by results" in the very narrowest sense of the term.

How this state of affairs is to be remedied is a knotty question which I confess appears to me somewhat hopeless of solution at the present time. It may be that by persistent attack from within and the pressure of competition from without the country will, in fact, must sooner or later, awaken to the situation. It may be that science will have to become more self-assertive and make its influence felt as a political power. There is need here, as has been often suggested, for a minister corresponding to the "Minister of Public Instruction," or the "Cultus-Minister" of other countries. The newly formed "British Science Guild" may fairly be expected in the course of time to help us in raising the level of public opinion towards the importance of research, this being, in fact, one of the primary objects for which this organisation has been founded.

##### *The Jubilee of the Foundation of the Coal-tar Colour Industry and its Lessons.*

The exaltation of scientific research into an abstract principle or "cult," which is the keynote of the remarks which I have put together for your consideration on this last opportunity when I shall have the honour of addressing you from the presidential chair, is, of course, a familiar subject to all who keep in view the objects of a society such as this. If I venture to formulate the principle somewhat more emphatically on this occasion, it is that the international gathering, which took place here last summer in honour of our distinguished past-president, Sir William Perkin, and in celebration of the jubilee of the foundation of the coal-tar colour industry, has given rise to many considerations which are intimately associated with the subject of this address. Although at that memorable assembly the voice of the nations was raised in gratitude for and in recognition of the numerous benefits arising from the establishment of a great industry, we must not forget that below the chorus of praise and congratulation, so justly sounded in honour of the founder, there was flowing an undercurrent of thought which, in some of the addresses and speeches, found verbal expression—the thought that this industry owed its existence to scientific research, and that it had been developed into its present magnitude by the never-ceasing applications of research. Speaking generally, it may be said that all the great steps, the new departures in the industry of coal-tar products, have been the outcome of pioneering work carried on in the first place without immediate reference to practical results. All honour to those who have developed these results into manufacturing operations, but honour in the first place to the scientific pioneers! This is the real lesson taught by the celebrations of last July. It may be of interest to consider in the next place how far this lesson has been learnt here on the one hand by the scientific public and on the other by the general public.

That the lesson has not been learnt by those who are most immediately concerned, the manufacturers themselves, is sufficiently apparent when we compare the enormous development of the industry in Germany with its comparatively small development here and its decadence in France, once an active centre and a successful competitor with us in the manufacture of coal-tar colouring